Attorney Docket No.: 3216.31US01 (SIL-03-131)

CLAIMS

What is claimed is:

5

10

15

20

25

- 1. An organophotoreceptor comprising an electrically conductive substrate and a photoconductive element on the electrically conductive substrate, the photoconductive element comprising:
 - (a) a charge transport material having the formula

$$Z = N-N-X-E$$

$$R_2$$

where R_1 and R_2 are, independently, H, an alkyl group, an alkaryl group, or an aryl group;

X is a linking group having the formula - $(CH_2)_m$ -, branched or linear, where m is an integer between 1 and 20, inclusive, and one or more of the methylene groups is optionally replaced by O, S, C=O, O=S=O, a heterocyclic group, an aromatic group, urethane, urea, an ester group, a NR₃ group, a CHR₄ group, or a CR₅R₆ group where R₃, R₄, R₅, and R₆ are, independently, H, hydroxyl group, thiol group, an alkyl group, an alkaryl group, a heterocyclic group, or an aryl group;

E is an epoxy group; and

Z comprises a phenothiazine group, a phenoxazine group, a phenoxathiin group, a dibenzo(1,4)dioxin group, a thianthrene group, or a phenazine group; and

- (b) a charge generating compound.
- 2. An organophotoreceptor according to claim 1 wherein X is a CH2 group.
- 3. An organophotoreceptor according to claim 2 wherein Z is a phenothiazine group.
- 4. An organophotoreceptor according to claim 1 wherein the charge transport material has a formula selected form the group consisting of the following:

- 5. An organophotoreceptor according to claim 1 wherein the photoconductive5 element further comprises a second charge transport material.
 - 6. An organophotoreceptor according to claim 5 wherein the second charge transport material comprises an electron transport compound.
- 7. An organophotoreceptor according to claim 1 wherein the photoconductive element further comprises a binder.
 - 8. An electrophotographic imaging apparatus comprising:
 - (a) a light imaging component; and
- (b) an organophotoreceptor oriented to receive light from the light imaging component, the organophotoreceptor comprising an electrically conductive substrate and a photoconductive element on the electrically conductive substrate, the photoconductive element comprising:
 - (i) a charge transport material having the formula

$$Z \subset N-N-X-E$$

20

where R_1 and R_2 are, independently, H, an alkyl group, an alkaryl group, or an aryl group;

X is a linking group having the formula -(CH₂)_m-, branched or linear, where m is an integer between 1 and 20, inclusive, and one or more of the methylene groups is

optionally replaced by O, S, C=O, O=S=O, a heterocyclic group, an aromatic group, urethane, urea, an ester group, a NR_3 group, a CHR_4 group, or a CR_5R_6 group where R_3 , R_4 , R_5 , and R_6 are, independently, H, hydroxyl group, thiol group, an alkyl group, an alkaryl group, a heterocyclic group, or an aryl group;

E is an epoxy group; and

5

15

20

Z comprises a phenothiazine group, a phenoxazine group, a phenoxathiin group, a dibenzo(1,4)dioxin group, a thianthrene group, or a phenazine group; and

- (ii) a charge generating compound.
- 9. An electrophotographic imaging apparatus according to claim 8 wherein X is a CH₂ group.
 - 10. An electrophotographic imaging apparatus according to claim 9 wherein Z is a phenothiazine group.
 - 11. An electrophotographic imaging apparatus according to claim 8, wherein the charge transport material has a formula selected form the group consisting of the following:

- 12. An electrophotographic imaging apparatus according to claim 8 wherein the photoconductive element further comprises a second charge transport material.
- 13. An electrophotographic imaging apparatus according to claim 12 wherein second charge transport material comprises an electron transport compound.

5

10

15

20

25

- 14. An electrophotographic imaging apparatus according to claim 8 further comprising a liquid toner dispenser.
 - 15. An electrophotographic imaging process comprising;
- (a) applying an electrical charge to a surface of an organophotoreceptor comprising an electrically conductive substrate and a photoconductive element on the electrically conductive substrate, the photoconductive element comprising
 - (i) a charge transport material having the formula

$$Z \subset R_1$$

$$R_2 \subset N-N-X-E$$

where R_1 and R_2 are, independently, H, an alkyl group, an alkaryl group, or an aryl group;

X is a linking group having the formula $-(CH_2)_{m^-}$, branched or linear, where m is an integer between 1 and 20, inclusive, and one or more of the methylene groups is optionally replaced by O, S, C=O, O=S=O, a heterocyclic group, an aromatic group, urethane, urea, an ester group, a NR₃ group, a CHR₄ group, or a CR₅R₆ group where R₃, R₄, R₅, and R₆ are, independently, H, hydroxyl group, thiol group, an alkyl group, an alkyl group, a heterocyclic group, or an aryl group;

E is an epoxy group; and

Z comprises a phenothiazine group, a phenoxazine group, a phenoxathiin group, a dibenzo(1,4)dioxin group, a thianthrene group, or a phenazine group; and

- (ii) a charge generating compound.
- (b) imagewise exposing the surface of the organophotoreceptor to radiation to dissipate charge in selected areas and thereby form a pattern of charged and uncharged areas on the surface;
 - (c) contacting the surface with a toner to create a toned image; and
 - (d) transferring the toned image to substrate.

- 16. An electrophotographic imaging process according to claim 15 wherein X is a CH₂ group.
- 17. An electrophotographic imaging process according to claim 16 wherein Z is a5 phenothiazine group.
 - 18. An electrophotographic imaging process according to claim 15 wherein the charge transport material has a formula selected from the group consisting of the following:

- 10
- 19. An electrophotographic imaging process according to claim 15 wherein the photoconductive element further comprises a second charge transport material.
- 15
- 20. An electrophotographic imaging process according to claim 19 wherein the second charge transport material comprises an electron transport compound.
- 21. An electrophotographic imaging process according to claim 15 wherein the photoconductive element further comprises a binder.

20

22. An electrophotographic imaging process according to claim 15 wherein the toner comprises a liquid toner comprising a dispersion of colorant particles in an organic liquid.

25

23. A charge transport material having the formula

$$Z = N-N-X-E$$

where R_1 and R_2 are, independently, H, an alkyl group, an alkaryl group, or an aryl group;

X is a linking group having the formula - $(CH_2)_m$ -, branched or linear, where m is an integer between 1 and 20, inclusive, and one or more of the methylene groups is optionally replaced by O, S, C=O, O=S=O, a heterocyclic group, an aromatic group, urethane, urea, an ester group, a NR₃ group, a CHR₄ group, or a CR₅R₆ group where R₃, R₄, R₅, and R₆ are, independently, H, hydroxyl group, thiol group, an alkyl group, an alkaryl group, a heterocyclic group, or an aryl group;

E is an epoxy group; and

5

10

15

Z comprises a phenothiazine group, a phenoxazine group, a phenoxathiin group, a dibenzo(1,4)dioxin group, a thianthrene group, or a phenazine group.

- 24. A charge transport material according to claim 23 wherein X is a CH₂ group.
- 25. A charge transport material according to claim 24 wherein Z is a phenothiazine group.
- 26. A charge transport material according to claim 23 wherein the charge transport material has a formula selected from the group consisting of the following:

